

REMARKS

Claims 1, 10 and 11 have been amended. Support for amended Claim 1 can be found at, for example, Example 1, page 11, lines 5-6. Support for amended Claims 10 and 11 can be found at, for example, page 7, lines 7-12 and 17-18. Claims 2 and 3 have been canceled. Claims 1 and 3-41 are pending, of which Claims 6, 13-25 and 27-41 have been withdrawn from consideration.

Response to Claim Rejections Under § 112

Claims 10 and 11 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

Claims 10 and 11 have been amended to more clearly define the subject matter which Applicants regard as the invention. Accordingly, withdrawal of the rejection is respectfully requested.

Response to Claim Rejections Under § 103

I. Claims 1-5, 7, 8 and 10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,586,791 to Lee et al. Applicants respectfully traverse.

According to the present invention, a sensitizing dye (copper (II) phthalocyanine-sodium tetrasulfonate) is contained in an organic layer at a concentration of from 0.001 to 100 mM.

In contrast, Lee discloses a semiconducting layer is formed of at least one material selected from the group consisting of polysilicon, amorphous silicon, pentacene, copper phthalocyanine, trans-polyacetylene, polydiacetylene, poly(p-phenylene), poly(p-phenylenevinylene), poly(2,5-dialkoxy-p-phenylenevinylene), polythiophene, poly(3-alkylthiophenes), poly(2,5-thiophenevinylene), polypyrrole, and polyaniline. Accordingly,

copper phthalocyanine itself, as disclosed in Lee, constitutes a semiconducting layer. Further, Lee does not disclose or suggest copper (II) phthalocyanine-sodium tetrasulfonate.

Thus, Lee fails to render obvious the present claims. Accordingly, withdrawal of the rejection is respectfully requested.

II. Claims 1, 2, 4, 5, 7-9 and 26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,217,792 to Chidsey et al. Applicants respectfully traverse.

The present invention relates to a film having a multilayer heterostructure comprising at least one organic layer formed by self-assembly, wherein the organic layer contains from 0.001 to 100 mM of copper (II) phthalocyanine-sodium tetrasulfonate.

In contrast, the organic dye molecules of Chidsey constitute a monolayer, and are not provided for exhibiting light absorption (improved photosensitizing property) but for exhibiting optical nonlinearity. Further, Chidsey fails to disclose or suggest copper (II) phthalocyanine-sodium tetrasulfonate, and is silent about “dye concentration.”

Thus, Chidsey fails to render obvious the present claims. Accordingly, withdrawal of the rejection is respectfully requested.

III. Claims 3, 10 and 12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Chidsey in view of U.S. Patent No. 5,169,672 to Harima et al. Applicants respectfully traverse.

Chidsey is discussed above.

According to the present invention, copper (II) phthalocyanine-sodium tetrasulfonate is utilized as a hydrophilic organic substance. More particularly, copper (II) phthalocyanine-sodium tetrasulfonate is used in an aqueous solution containing 10 mM of polyacrylic acid and 10 mM of copper (II) phthalocyanine-sodium tetrasulfonate in Examples I and 2.

In contrast, Harima discloses organic coloring matters such as phthalocyanine, metal complexes of phthalocyanine and so on as the hydrophobic organic substances, which constitute a thin film, wherein the organic coloring matters are main constituent materials, not minor additives. Harima fails to disclose or suggest copper (II) phthalocyanine-sodium tetrasulfonate.

Thus, Chidsey and Harima fail to render obvious the present claims. Accordingly, withdrawal of the rejection is respectfully requested.

IV. Claim 11 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Chidsey in view of U.S. Patent No. 5,536,573 to Rubner et al. Applicants respectfully traverse.

Chidsey is discussed above.

Rubner discloses a method for producing multilayer thin films of electrically conductive polyaniline comprising alternately dipping a substrate into a dilute polyaniline solution and then into a dilute polyanion solution or a water soluble non-ionic polymer solution. Optical microscopy indicates that the resultant multilayer thin films are homogeneous and uniform at the micron scale. According to Rubner, the electrically conductive materials such as polyaniline are main constituent materials forming multilayer thin films, not minor additives. Further, Rubner is silent as to phthalocyanine.

Thus, Chidsey and Rubner fail to render obvious the present claim. Accordingly, withdrawal of the rejection is respectfully requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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